TMF

THE MAC FLYER - For Greater Safety in MAC Air Operations

February 1988

"Mac" McKenzie . . . page 8

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Mrs. Frances A. Caldwell — Writer/Editor
Mr. Tom O'Laughlin — Art Director

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MAC's DO . . . On Safety

Maj. Gen. James D. Kellim

I'm delighted to have this opportunity to address MAC's crewmembers on safety. As IG, and now as MAC DO, safety is always one of my primary concerns. MAC's worldwide operating environment presents us with problems and obstacles unique to very few other commands. We have to face stress from cold, heat, long days, fatigue, strange languages, customs, and food. Those are the obvious problems that are always before us and we've found ways to handle those factors very well.

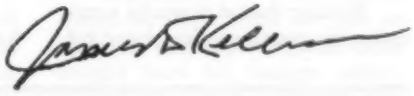
Where we have our greatest difficulty isn't with physical obstacles but mental attitudes. Keeping a good attitude toward doing the job safely is tough under the pressure of accomplishing the mission. There will always be the need to complete the mission on schedule, to make the exercise a success, to make a favorable impression on those watching a special operations demonstration. But we can't let our desire to do those things compromise safety. It's been said before, but safety and mission accomplishment do go hand-in-hand.

I believe that's where commanders play their most important role. Commanders must instill in their people a sense that safety is a primary part of every operation. They must be totally involved in safe mission accomplishment. People in any organization will emphasize what the "boss" believes is important. No commander can afford to let his people become casual about safety.

Safety encompasses so many things it can become very hard to define, but its core is the desire to do the job according to the way we're trained. We need to continually reexamine our procedures and attitudes to make absolutely sure we're doing the job the smartest way possible. Are we doing the job the way we were trained or are we "modifying" some procedures for some intangible benefit? Are we encouraging our people to exceed their personal limits? It's just not necessary! We establish limits and procedures to not only educate our people on how to do the mission, but also to protect them and our equipment. There are no peacetime reasons to go beyond those limits.

Therefore, safety can't be viewed as just a word but must be translated into action. If we train our people properly, give them good equipment, good living conditions, express concern for their families, and instill in them pride by rewarding them for doing the job right, we'll have a safe and effective crew force.

That's where commanders come in again. They must take the lead to instill a safe attitude in their crewmembers. Commanders must expect their crews to do the mission as they're trained and back up their crews when they make decisions based on safety considerations. We must preserve our war-fighting capability. The nation simply can't afford to lose that capability through needless mishaps. Each member of MAC, from the airman on the line to every commander and supervisor, must realize safety is an integral part of *every* mission.



Galileo's Messenger

You'll find out. . . The AC is always the last to know!

By Mr. James B. Zazas
Carthage, North Carolina

Capt. Darryl Rush completed his list. His notes reflected his determination to be the wing's best aircraft commander. Nobody was going to think otherwise.

Reclining further on his aircraft's top crew bunk, Captain Rush pondered the encounter in the wing command post a short time earlier that evening. Was the DO really that upset with him? Breathing deeply, Captain Rush cleared the last of the butterflies still trapped in his stomach. The verbal lashing he received in the windowless, concrete building was upsetting. However, more disquieting was the fact the deputy commander for operations thought so little of his abilities as an aircraft commander, or in the colonel's words, the *"Air Force's finest."*

Captain Rush dwelled on the DO's scathing comments. "Lack of consideration towards fellow crewmembers' abilities and well-being," he said. I can take care of my troops; I watch out for them, thought Rush. "Callous attitude towards flight safety . . ." Good grief! *I have to fly safe, I'm an aircraft commander.* Swelling with pride, Captain Rush's thoughts became spoken words, "And a darn good one at that."

Putting the list down for a moment, the young captain closed his eyes and reflected on other points. His mind drifted, searching for ways to be a better, safer, and more caring aircraft commander. He wanted to leave no doubt he was capable of being one of the Air Force's finest.

"Whoa, lad," came a voice from beside the bunk. Captain Rush was startled as a pair of muscular arms encircled him. The unidentified voice continued, "Getting a bump on the noggin is no way to start a glorious evening, especially by yer falling off a crew bunk."

Steadying himself, Captain Rush turned around to thank the gentleman who had just saved him from a potentially nasty fall. There stood a stout individual with broad shoulders. He wore a powder blue flightsuit festooned with colorful patches. Only the glossy black nametag above his left breast pocket was clearly readable. It said "Major M. Murphy."

The stranger had a wide smile which revealed several crooked teeth. The white, wavy locks of hair gave Darryl Rush the immediate impression this gentleman was much older than he actually was.

"Thank you, sir," Captain Rush said, mildly shaken from his near-fall.

"Not at all, laddie," the white-haired stranger said in a thick Irish accent. "Not at all." Major Murphy stared at the young captain and questioned, "We can't afford to lose one of the Air Force's finest, can we?"

Captain Rush chuckled but felt compelled to correct him. "Sir, you wouldn't think I was one of Air Force's finest 30 minutes ago. Golly, I got . . . ."

Major Murphy, raising his hand, interrupted. "Yes, lad, you got a classic chewing-out. Do you a lot of good, I'll wager it will." The stout major turned around and walked down the few steps to the ground below.

Walking past the number 1 engine, Major Murphy paused to view the myriad of activity on the busy flightline around him. The setting sun behind him cast a long, ever growing shadow. Likewise, large shadows cast by nearby aircraft threatened to swallow the multitude of people and equipment preparing for night missions. The major continued, his peculiar accent very evident now. "Ah, yes. Night operations always bring out the best in a crew. Fatigue, the stress of on-time takeoffs, multiple-ship formations, unusual loads, exercises, evaluations, and so much more, make my job exciting or more difficult, accordingly." Casting a glance at Captain Rush, Major Murphy asked, "You'll be

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flying tonight, will you not?"

"Yes, sir." Captain Rush responded briskly. His mind started to flood with ways to impress this visitor.

"Good," replied Major Murphy. Turning and walking away, the stocky major chuckled as he repeated softly, but within earshot of the eager captain, "Air Force's finest, Air Force's finest . . . ."

The ramp was now very dark. Even with vast banks of brightly lit floodlights lining the ramp, it was still dark. Captain Rush's aircraft was placed on one of those far rows where the shadows of night prevailed.

A young, fresh-faced lieutenant stuck his head out of the cockpit's left window. "Hello, sir," he yelled in a mocking Irish accent. He added, "Top of the evenin' to you."

Captain Rush looked incredulously at his youthful copilot and yelled back, "Don't tell me your name is Murphy, too?"

The lieutenant replied, his tone now void of any accent, "No, sir. Just good old 'American' Smith. Only our observer has the Irish in him."

Captain Rush felt as if he had the wind knocked out of him. "Observer? Is this major from a numbered Air Force stan-eval? Am I getting a no-notice checkride, a do or die mission observation to save or lose my wings? Why wasn't I told there would be company on the mission?"

Captain Rush's fears were soon alleviated by the lieutenant now standing before him. His right hand was extended and Captain Rush returned in kind with a firm handshake.

"Lieutenant Jonathan Smith is the name. Keeping you out of trouble tonight is my game. Sir, I took the liberty to file the flight plan in your absence, as well as pick up the crew lunches. I also discovered Major Murphy has blanket orders to travel just about anywhere he pleases in an observer capacity." Lieutenant Smith took a step back and puffed out his chest in mocking pride. He added, "Not bad for the new kid on the block."

Captain Rush was surprised. "That's right. You did just check out here. Thanks for covering for me. I didn't mean to doze off. Too much has been happening to me lately and . . ." Captain Rush's voice trailed off.

Sitting in his seat of command, Captain Rush reached into his flight bag for his flashlight and queried the young lieutenant, "When did the good major say he would come back?"

"He'll be here at engine start. I'm surprised he didn't tell *you*, the aircraft commander."

I have to fly safe,

I'm an aircraft

commander!

Walking down the flight deck steps to the ground below with the lieutenant in tow, Captain Rush said, "No, he didn't tell me. But as you'll find out when you upgrade, the AC is always the last to know." Banging the flashlight against the palm of hand to spark the almost dead batteries to life, Darryl Rush added, "That Major Murphy seems like a bad dream come to life."

Lieutenant Smith chuckled and asked, "Sir, do you want to give the crew briefing now or wait until Major Murphy arrives?"

The two officers, now underneath the tail of the large transport, were joined by the other crewmembers. Captain Rush's flashlight was nothing more than a dull glow in the night shadows. "No," he said, "Let's do it now. We're already pressed for time. Drat! I left my checklist in the cockpit. Oh, well . . ." Captain Rush fumbled hurriedly through the obligatory briefing, attempting to recall important items by memory.

As crewmembers returned to their stations, the loadmaster started a quiet conversation with the flight engineer. Only Lieutenant Smith heard the comment, "Now I know why the AC's nickname is 'Captain Deadly Rush'."

Captain Rush was ready to call for the 'Engine Start' checklist when Major Murphy appeared at the aircraft. He climbed aboard the four-engine, camouflaged aircraft and secured a seat on the lower crew bunk next to the navigator's station. His smile was infectious as well as reassuring. Other crewmembers returned the greetings.

"Good evening, sir," said Captain Rush turning around in his seat. "Your oxygen connection is adjacent the nav's table and you can use the interphone box behind me. I'm sure you'll enjoy your ride with us tonight." Captain Rush stifled a yawn and added, "You'll soon see, as you mentioned earlier, the Air Force's finest at work."

Major Murphy nodded in agreement, his broad smile never changing, as he secured his lap belt. He reached into his flightsuit and pulled out a small note pad. Several items were already written on the yellow lined pages. Major Murphy added some more notes.

The night routes and subsequent airdrops went as well as could be expected. Captain Rush fought back his fatigue with a quick temper and equally quick inputs on the controls. Repeated requests by the youthful copilot to fly the aircraft for a few minutes

and allow the disgruntled aircraft commander a chance to relax tense muscles were met always with a sharp, "No!"

The morning sun appeared above the summertime horizon as the aircraft was on the last route. The warmth it radiated initiated some strong convective activity. Cumulus clouds started to billow rapidly. A few, in turn, became miniature thunderstorms.

"Pilot, navigator. My radar is showing some cells starting to form near the field."

Captain Rush looked at his concerned copilot. "Nuts! Pilot to crew, we're going home. Let's get this bird on the ground before these storms force us to divert somewhere."

Reaching over the throttles and condition levers, Captain Rush threw the landing gear lever down as the startled copilot looked on in disbelief. As the aircraft's massive landing gear struggled against the tremendous airloads, the anxious captain called for the Before Landing Checklist. Major Murphy, still smiling, made some more notes.

Captain Rush was determined to stop his four-engine, black and green transport on the now rain-slick runway. The ominous rain shafts were no longer pounding the runway; they had moved quickly beyond the base perimeter.

No go-around now, thought Captain Rush as he fought for control of the violently rocking aircraft. His vision caught a glimpse of the large, bright orange windsock near the runway. It was standing straight out and spinning wildly as the transport's wheels slammed onto the concrete. Captain Rush retarded all four throttles rapidly and was intent on bringing all four engines into reverse just as quickly.

"Whoa! Stop! Cease and desist, laddie," boomed a familiar Irish accented voice from behind. With a reverberation louder than a thunderclap, Major Murphy said, "I've seen enough."

Captain Rush felt a powerful tug on his shoulder harness and the collar of his flight suit. Someone was pulling him up and out of his seat. Reacting to the unknown force tugging at him, Captain Rush reached around and groped at the force pulling him. He found the powerful arms of Major Murphy.

"Don't worry, lad. You're through flying for a bit, you are," came the voice from behind. "Now, come with me!"

Darryl Rush wanted to resist, but couldn't. His muscles went limp as he allowed the powerful arms to pull him completely out of his seat. It was only then he noticed there were no other crewmembers in their seats. A shudder of fear swept through his body.

Stop! I've seen enough!

"Am I dead?" Captain Rush wondered aloud.

"No. You are very much alive," replied the major. "But if you keep up your hooliganism, you'll only be a memory in somebody's picture book."

Captain Rush felt himself seated on the metal steps leading outside the aircraft. Before him was Major Murphy, his blue eyes pierced with emotion, his smile now a scowl, and cheeks flushed with anger. He spoke.

"Air Force's finest . . . Air Force's finest! Lad, that 'professionalism' you displayed over the last few hours would barely qualify you as a termite farm gate guardian. Air Force's finest, indeed!"

Captain Rush felt anger rise up from within. However, before he could speak, Major Murphy continued.

"Lad, what gives you the right to serve in your capacity? What gives you the right to compromise the well-being or, possibly, the life of a fellow crewmember?"

"I'm an aircraft commander," blurted Captain Rush.

"Exactly!" came the terse reply. "You are an aircraft commander, charged with responsibilities few positions the Air Force or life in general can offer. Am I correct?"

Captain Rush looked at the ground. One chewing out for the day was bad enough, but another one? This guy was beginning to sound like the DO. Captain Rush managed a weak, "Yes, sir."

Major Murphy continued. "These responsibilities demand a professional attitude to do your best within the scope of your abilities and those of your crew. A constant, dedicated effort must always be made to learn and perform your mission safely. You must not take your position for granted. Am I correct?"

Captain Rush felt defeated. He replied, "Yes, sir, yes. All you say is true."

Major Murphy leaned over and spoke softly, almost in a whisper, "Then why are you so callous about your crew's abilities, their well-being, and flight safety in general?"

Captain Rush rose quickly, the fury in him built to a peak. "Sir, with all due respect, this is my crew and my aircraft. You have no right to . . ." Captain Rush's voice trailed to silence. Major Murphy was no longer standing before him. In fact, he was nowhere to be seen.

"Quite the contrary, captain!" boomed the familiar voice, now from somewhere above. Looking up, Captain Rush saw Major Murphy standing atop the transport's

broad wing. He was staring down intently at the obviously shaken captain. "I have every right to question one of the Air Force's finest!" the major added.

"Who are you?" Captain Rush stammered.

Major Murphy let out a laugh that shook the whole aircraft. He sat down on the wing's leading edge, his broad smile full and friendly. "I'm Murphy, that impish quality of life that ensures what can go wrong generally will." The laughter in his eyes quickly became a cold stare as he continued. "However, I don't like people treading into my territory. If you were kin, I could be proud of you, maybe. But you aren't. I work alone!"

Captain Rush struggled for answers. "What, what is going on here? What is happening to me? Will somebody please tell me what is going on?" Captain Rush was completely unraveled.

Murphy obliged with the answers. "Good captain, my job lets me set the chain of events so that folks such as yourself learn and advance as a species. Though I work primarily with inanimate objects, such as machines, I do like to dabble with living creatures as well. I've been cursed by many and praised by few. However, most agree the havoc I bring forth generally results in a wealth of learning. I take pride in the lessons you humans learn and the challenges you present to make my job more difficult.

"However, when an uncaring individual or crewmember, such as yourself, continues to throw his professional responsibilities to the wind, I'm not going to sit back and take the heat for *your* foolishness. Quite frankly, Captain Rush, I've been in many similar situations, but this is one of the worst. Your actions, and above all, your attitude stinks!"

Captain Rush looked spellbound at the abberation before him. "What can I do to improve?" he asked.

"Ah, good," Murphy replied. "You are beginning to accept a personal challenge. I like that quality in an individual. I have here a list of those areas I would, how would you say it, grade Q-3? Yes, these items are the areas in which you exhibited some degree of unprofessional behavior or attitude." Murphy held the list up to the light of the morning sun. He peered intently at the items listed. He shifted his glance to the inquisitive captain below. "I can see why you have the nickname 'Deadly Rush,' laddie. You've become complacent in your position and somewhat callous towards your crew and flight safety. You can learn a bundle from what I have here, only if you have the will to do so. Are you up to the challenge?" he asked as he tossed the yellow-lined note pad to Captain Rush.

Darryl reached out to grab the list. Instead, he found himself clutching at a startled young lieutenant who, in turn, was grabbing the captain by his flightsuit collar. "Hey, Captain Rush, stop fighting me and wake up. Golly, sir, I'm gone five minutes and you fall asleep."

Consciousness slowly returned to Captain Rush. The blurred image of Lieutenant Jonathan Smith came into focus. "Here, sir, you dropped this pad of paper. And, yes sir, you are a darn good aircraft commander."

Captain Rush clutched the pad. On it were notes, in his handwriting, he had made during the meeting in the wing command post. Items included proper and thorough briefings, use of checklists, smooth aircraft control, maintaining personal equipment "mission ready," respect the power of weather, respect the abilities and needs of fellow crewmembers, learn from others, stand tall as one of the Air Force's finest. . . .

However, written below the list were words not in his handwriting. They said, "You can't teach a man anything, you can only help him find it within himself." Below it was written "Words of thought, courtesy of Galileo, famous Italian astronomer." Signed, "Murphy."

A cold shudder swept through the captain's body. As he lowered himself down from the crew bunk, his young lieutenant copilot came bounding up the flight deck steps.

"Sir, it's time for a crew briefing. Do you want me to gather the crew up front where there's some better light?"

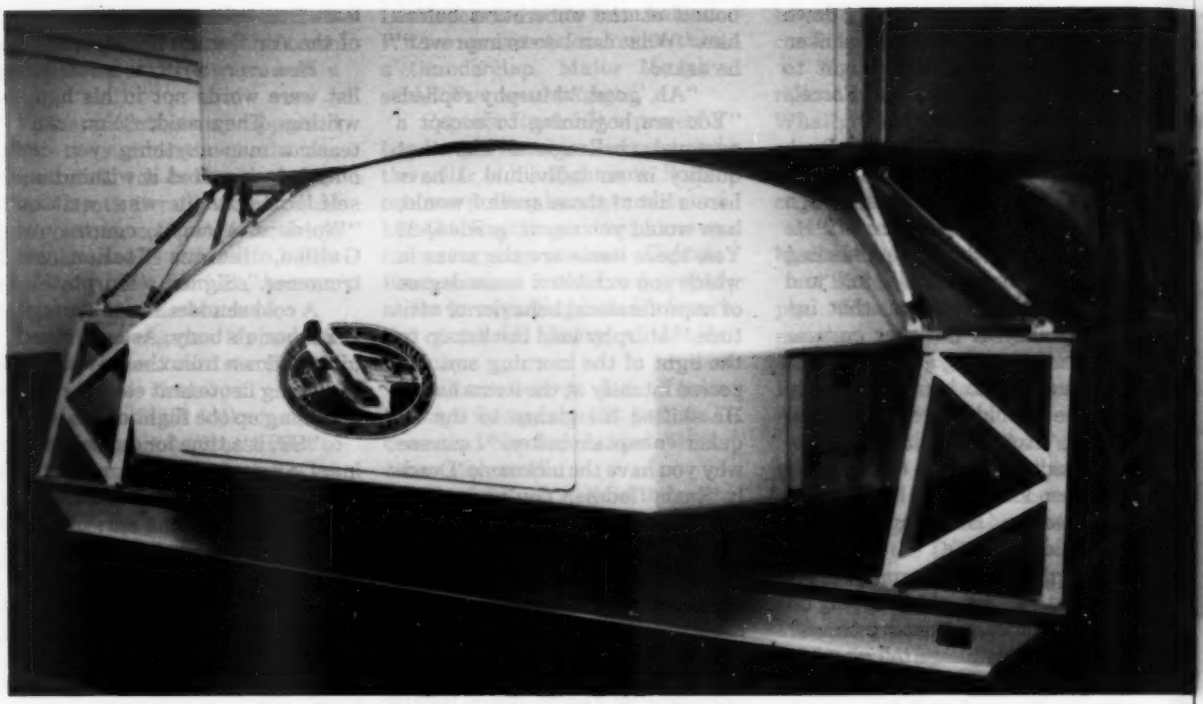
Captain Rush looked at his eager copilot and said, "Thank you, John, excellent idea. By the way, after the brief, ask maintenance to rustle me up a pair of batteries. My flashlight appears to be dead."

Captain Rush grabbed his briefing checklists as well as other data pertinent to the mission at hand. Stepping outside the aircraft, he was greeted by a broadly smiling major in a powder blue flightsuit. Captain Rush was at a loss for words while the two officers exchanged handshakes.

"Greetings, laddie," the major said in strong, Irish accent. "Here are copies of my orders. Your commander says you are one of the Air Force's finest. Very good! I am most anxious to see how you lads accomplish your mission."

Captain Rush looked down at his yellow lined pad and back at the stout major standing before him. As ever, there was that broad, grinning smile, with crooked teeth, looking back.

Mr. Zazas, a familiar contest-winning personality, is a B727 Flight Officer with Piedmont Airlines. Previously, Mr. Zazas flew C-130s at Pope AFB, North Carolina.



Flying the Simulator

Piece of Cake

Well, it's that time of year again. Your friendly squadron scheduler just called and informed you it's time for your annual simulator check. Whoopee.

Don't feel alone, it's natural to be a little apprehensive as you dig out the books. (Of course, a quick review is all you need because of your continuous study program, right?) However, as a professional you lay those feelings aside and get on with it.

Most of us get into the simulator expecting it to be a pretty demanding beast. What we all need to avoid are habits that make the simulator harder to "fly" than it is. The worst of these habits can be described, in general, as being "rough" with control inputs. Let's take a pilot in a simulator who finds himself 100 ft off his desired altitude. Because he's slightly angry at the simulator, he gives the elevator control a violent jerk and winds up porpoising for the next 10 seconds. A few minutes later, he responds to a flight director roll command with rough aileron inputs and winds up in a roll cycle back and forth.

But, looking back a few weeks, while flying a "real" airplane, this pilot found himself a little off his altitude and once in a while would overshoot his heading by a couple

of degrees. However, in this case he was very aware of passengers aboard and gently milked the airplane back on heading and altitude without overshooting. If he could psych himself into believing there was a full load of passengers in the back of the simulator, he would find the simulator easier to fly. While no one can convince us the simulator flies exactly like the airplane it represents, the more we fly it as though it were an airplane, the easier it is to control. For those who would like a more technical explanation, the following may help. The simulator is a combination of four separate inputs:

—Performance data representing all the various charts relative to power, acceleration, decelerating climb rates, turning rates, etc.

—The control feel is representative of pressures required to maneuver the airplane.

—A visual system tied to the two inputs above.

—A motion system designed to make you believe you're pulling "G" when in fact you're not.

Thus, the simulator is designed to react to inertia as an airplane would. Believe it or not, if you're rough with an airplane, it too becomes hard to fly.

The problem is easier to explain than solve. For some reason, whenever we transition from a stable machine to one touchier and more responsive, we're stimulated to use quicker and larger control inputs, which is exactly the opposite of what we should do. It takes almost constant and intense concentration to keep control inputs small and smooth. Again, think about the passengers in the back and you won't be so "pooped" at the end of the training period. Have you also noticed when you reduce the physical workload of controlling the simulator, the headwork and procedures become easier?

Another problem we face in the simulator is lack of some important cues available to us in the airplane; i.e., exact engine sound, "G" forces, and sensations experienced through the middle ear. All of these factors affect our performance when flying the airplane. This is particularly true when flying IFR in the simulator. We are concentrating on the instruments and although they may respond in exactly the same time frame as the airplane; without the exact motion cues, which occur much quicker than the instrument, it appears the instruments are extremely slow, causing us to over-control.

There are other factors affecting your simulator performance. See if this sounds familiar:

"I was doing fine, and not over-controlling when on instruments, but as soon as I broke out and went visual on a non-precision approach everything came unglued trying to land. If I look up at the runway, I start rolling back and forth and I can't stay in the slot. I'm a little confused about why the simulator should become unstable when the visual system shows a picture on the windshield. This leaves me puzzled about why I'm able to fly smoothly on instruments, but over-control when flying visually. I can solve my over-controlling while on instruments by adjusting to what I do with my hands and feet. How do I solve the problem using the visual system?"

To understand the problem let's set up a simulation in an airplane rather than a simulator:

"I've just broken out below the overcast exactly at MDA on a non-precision approach. It's a very dark night, the approach is over water, and visibility is at the lowest non-precision minimums. There are no ground lights visible. At this instant, the only thing I can see is the dim glow of sequence flashers or REILs about a mile ahead in a field of ink."

At this instant, what I see outside gives me some useful information about my alignment with the runway. But there are not yet enough visual cues outside for me to control my attitude, airspeed, or sink rate.

Tough problem. If I stay 100 percent on instruments, I can control the aircraft smoothly, but I may not land on the runway. If I look outside, I don't have enough visual cues to control the airplane. My solution is not to end my instrument scan, but rather expand it to include the outside view as though it were another instrument and continue using the basic flight instruments.

In order to keep a stabilized approach, you must do both. When you make the decision to leave MDA you need to come back into the cockpit and use your instruments. Your experience tells you what the pitch attitude should be when you're in the slot, so why not just put the airplane there. Likewise you know what the sink rate looks like for a stabilized approach and the proper airspeed. Crosscheck, scan, whatever you want to call it. However, don't forget to include what you see out the window as you move from one instrument to another. The answer is to stabilize your flight path through the use of your instruments and compare that to the visual picture. The faster you can move your eyes from one to the other, the easier it becomes.

Now, that wasn't so tough after all, was it? Simulator technology keeps improving and new ones "fly" much more like real airplanes. They'll be around as long as there are pilots, so as the old saying goes, "Know thine enemy."

★

Adapted from: *KAI TALK*

The AFSOF and SAFETY

Safety does have a place in the SOF Mission.

By Maj. Glenn E. Phillips
Chief, Exercise and Special Operations Branch
Directorate of Safety

"The mission was a success." "You did a great job under pressure." "Everyone pulled together to get the job done." "Execution night went safely."

Did you recognize a statement that didn't seem to fit? No, this is not a PME question, all of them go well together. Yet many exercise community types may not agree safety's primary goal is mission success. Indeed, if the mission was accomplished safely, it was also successful. Safety's objective is to preserve our people, equipment, and facilities. Why? The answer is not elusive, cosmic, or otherwise difficult to understand; accidental, tragic loss of limited, nonreplaceable manpower and resources seriously degrades our ability to support JCS directed operations and ultimately, to wage war!

If that thought scares you—good. Because that's what safety is about. Safety permeates every operation we participate in, from driving to work to flying in exercises. Narrow this premise to Air Force Special Operations Forces (AFSOF) with highly trained, uniquely skilled aircrews and maintainers. This small group of combatants operate some of the world's most sophisticated equipment in flight regimes granting no room for error. Moreover, although their mission can be single-ship, they're always monitored at the highest levels. An entire theater's operation may hinge on SOF success. With these odds, why bother with safety?

"We must exercise like we're going to war." RIGHT! *"In war, safety is left at home."* WRONG!!! Let's look at some exercise basics. An exercise is considered a success when:

1. Objectives were met;
2. User's objectives were met; and,
3. All units involved benefited from the experience.

Fail to achieve one of the above and the exercise aftermath leaves memories for a few that become rumors to many on the inability of a unit or weapon system to "hack the mission." Unfortunately, by vir-

tue of its nature, SOF airlift tends to look the worse when it comes to exercise mission cancellations. The reason is simple, our participation *is* the real thing; we actually fly our craft. Maintenance malfunctions, judgment errors, and weather, *really do kill.* That is to say, there's no King's X once airborne in any MAC flying; no time outs, no whoops—I forgots. While equipment operation, flight regime, and planning can be simulated, the smite of terra firma is not! As a result, many exercise scenario "go-no-go" decisions are left to the aircraft commander; saying *no* may well be the toughest decision he'll ever have to make. That kind of decision brings with it consequences that make him want to study *ad infinitum* the potential danger. Ultimately, fearing the whiskey delta label, he may risk his cargo, crew, and craft. Yet his better judgment would, and always will, win support from exercise commanders.

When exercising our special operations forces, we start with given risks; night operations, prolonged flights with several air refuelings, working with sister services governed by their own regulations, and changing scenarios are but a few. Accepting the minimum can become the norm for AFSOF crews. In fact, when the exercise objective is to define a minimum standard, they can be planned to operate on the razor's edge. These are the ground rules and we cannot and should not change them. We must recognize them for what they are—planned and accepted risks—and accomplish the mission with risks factored in. This is paramount to preserving our valuable people and equipment. Knowing your enemy and capitalizing on his weaknesses leads to victory. In this case, your enemies are risks; your victory is mission success. But equally important to recognizing risk is implementing specific safeguards that achieve mission success. If you know the hazards, your planning should address them so you can take necessary actions to deal with them and still "hack the mission," or cancel or delay if risks are too great.

After we've planned and rehearsed a mission with both planned and previously unforeseen risks present, what other problems exist? Most crewmembers might guess incidents happen only in perceived risky areas: night, weather, goggles, etc. But that's not true. When risk assessment is high and planning intense, air and ground performances are usually outstanding during those "risky" moments. But after the hard part is over, there is a tendency to prematurely relax, reflect, and perhaps slide into a little complacency on the way home. At this point, it's basic task accomplishment, everything from computing data to lowering gear, where crews sometimes make mistakes.

Why are highly selective and thoroughly trained professionals making mistakes on routine tasks? Simple—the "important" parts are over, what remains is routine; the difficult tasks are done. People tend to be content dealing with the few remaining "routine" tasks at hand, but what happened to that safety/mission accomplishment attitude present during those "risky" periods? Each individual still has safety on his/her mind, but keeping safety present in the cockpit is a continuous series of actions reminding everyone the mission isn't complete. Do any of the following ring familiar bells? *"I thought he did the data." "Did we run the before-landing check?" "What were the winds?" "Did we get range clearance?"* The bottom line becomes self evident; when operating inside or outside the aircraft, *difficult* tasks get everyone's attention. The simple basics get little or none.

One final hazard can negate all the corrective actions, thoughts, and beliefs discussed above. We'll call it a human factor, and label it—misapplied *pride.* Even after the most thorough work by planners, most skillful execution by aircrews, most meticulous attention to detail by everyone, one insidious act of misapplied pride can have fatal results. Why? Because the thought processes for planning are premeditated, conscious decisions to do what is necessary. Pride is an emotion; a very strong emotion. So what can you do? Continuously query your thought process during decision-making. Is your "go-no-go" decision founded on meticulous analysis of all factors, or are some factors selectively overlooked so you can *make it work?*

In conclusion, accidental loss of people and equipment is always tragic. It's heartbraking to look back and realize that the loss of a comrade was preventable. We've suffered some very costly mishaps in the MAC community. The dollar cost pales when compared to the cost of lives. All have seriously impacted our warfighting capability. Our resources are simply too few, too hard to replace, and absolutely vital to our current national strategy.

Recognize your responsibility to protect complex equipment and unique people by taking advantage of exercise experience. Analytically expand your planning, thought processess, and professional skills. Most of all, exercise the hardened judgment you've acquired, and remember—"Safety Happens."

Disaster resulted from going . . .

Beyond The Bounds

Adherence to prescribed and established procedures should be the easiest part of any aviator's job. We're trained to certain standards and checked and rechecked on those standards until it seems all we do is fly checkrides. Circumstances do arise when we have to, for operational and safety considerations, deviate from those procedures; but, we should always keep those procedures in mind and return to them when the need to deviate passes. All too often, as the captain of a commercial airliner found on 25 October 1986, straying beyond the bounds of prescribed procedures leads to an aircraft mishap.

Flight History

Piedmont Airlines Flight 467, a Boeing 737-222, was a regularly scheduled flight from Newark International Airport, New Jersey, to Myrtle Beach, South Carolina, with an en route stop at Charlotte Douglas International Airport, North Carolina. There were 114 passengers and 5 crewmembers on board.

Flight 467 entered the Charlotte area at 1953 EDT, contacted Charlotte approach control, and was told to expect an ILS to Runway 36R. About 5 minutes later, Charlotte final controller transmitted to all aircraft inbound to Charlotte the following weather information: "Measured ceiling 400 overcast, visibility 2 miles, light rain and fog, temperature 60 degrees, dewpoint 59, wind 090 at 8, altimeter 30.01."

About 2001, the Charlotte final controller directed Flight 467 to fly a heading of 195 degrees "for a close-in base leg." Flight 467 acknowledged and 43 seconds later was directed to descend to 2,400 feet.

At 2002:42, the final controller informed Piedmont Flight 309 (which was ahead of Flight 467 to Runway 36R), of a right-to-left wind of 20 to 25 knots on the ILS course. Although Flight 467 received this information, neither pilot commented on the winds nor discussed possible changes needed during approach. About one minute later, the final controller informed Flight 467 it was three miles southeast of HAYOU, the ILS final appoach fix. He directed the flight to continue its turn until reaching 330 degrees and maintain 2,400 ft until established on localizer. He then cleared the flight for the ILS to Runway 36R. Flight 467 acknowledged the clearance.

At 2005, the first officer said, "standard callouts," while simultaneously the captain said, "gear down, it's going to be tight." The first officer acknowledged the command but didn't lower the gear until 2005:39. Flight 467 contacted Charlotte tower at 2005:36, and was told the surface wind was 100 degrees at 4 knots and the controller cleared them to land. At that time, flaps were set to 5 degrees. Eighteen seconds later, the captain called for "flaps 10" and then called for the next two flap settings of 15 and 25 degrees.

Half a minute later, the captain commented to the first officer, "Yeah; George (the autopilot) didn't do me any favors there," and two seconds later added, "We'll get back on it in a second." After the accident, the captain stated he prefered using the autopilot on ILS approaches, but couldn't establish autopilot control this time.

At 2006:37, the first officer said, "I'm going to start some lights for you now on the ah recalls been checked the speed brake is manual—landing gear is down and three green, and flaps—to go."

The captain called for final flaps of 30 degrees simultaneously as the first officer said "to go." The Board couldn't determine if the captain verbally responded to the first officer's callout that the speed brake was in manual. The first officer called 100 ft above minimums at 2007:03 and, at the same time, the ground proximity warning system (GPWS) alerted "Glideslope." The first officer called "at minimums" at 2007:09 and, at the same time, the GPWS alerted "Whoop whoop pull up." The CVR recorded the sound of touchdown at 2007:19 and, 5 seconds later, the first officer said, "Good show."

One witness, the local controller, stated the airplane touched down near the D3 intersection on the runway, about 3,000 ft beyond the approach end.

The captain told Board investigators that following touchdown:

"I had my hands on the throttles. There's a detent. I

cracked the thrust reversers to the detent to open them. As I did that, the speed brake had not deployed automatically. I manually deployed the speed brake, went directly back to the thrust reversers, and . . . I did not get full reverse . . . I applied the brakes immediately after I deployed the speed brake . . . And when the wheel brakes were applied, there was no sensation of stopping, not a sensation of antiskid, a cycle, there was nothing. And I was still trying to pull full reverse . . . I didn't get full reverse . . . (and) without full reverse, I lost high airspeeds where they're most effective and that's where I lost most of my stopping (capability)."

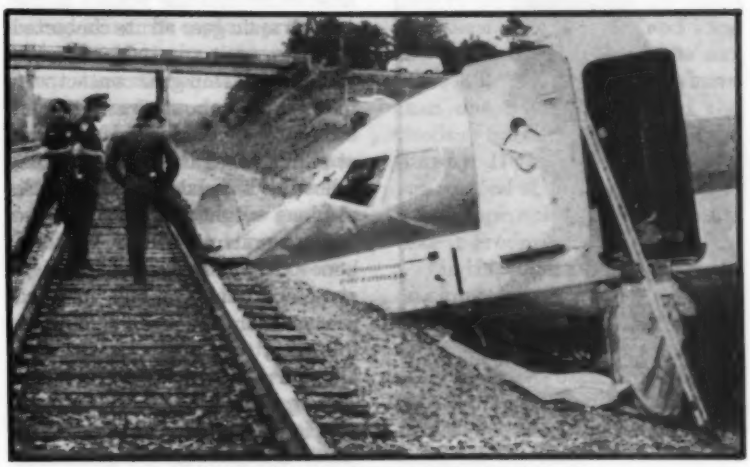
After touchdown, the airplane continued its rollout and, at 2007:43 the first officer said, "We're gonna get the lights on the overrun." Two seconds later, the airplane struck the localizer antenna array for Runway 36R, located about 300 ft from the departure end of the runway, struck a concrete culvert used for drainage located 18 ft from the localizer; and continued through a chain link fence. It traveled about 440 ft beyond the departure end of Runway 36R and came to rest on the edge of the Norfolk Southern Railroad tracks, which were perpendicular to the runway.

Analysis

The NTSB found the flightcrew properly certificated and, based on available post-crash evidence, the airplane free of preexisting damage or defects. The Board then focused on the captain's and first officer's actions to determine how their flight procedures contributed to the accident.

Before Flight 467 crossed the final approach fix, HAYOU, the captain didn't reduce airspeed enough or properly configure. The first officer didn't bring either problem to the captain's attention. Piedmont procedures specify that before crossing the LOM, the final landing flap setting should be selected and airspeed reduced to a level appropriate for that flap setting. The CVR indicated the final flap setting wasn't accomplished until the airplane was on glideslope, well inside the final approach fix. Further, the first officer didn't lower the gear until 2005:39, and the captain didn't select the final 30 degree flap setting until 2006:48, when the airplane was less than 1 mile from the runway threshold and 2 seconds before the first officer made the 500 ft (AGL) call. Moreover, airspeed wasn't reduced to 131 knots until after landing. Thus, Flight 467's approach was carried out in a manner well outside Piedmont's established parameters.

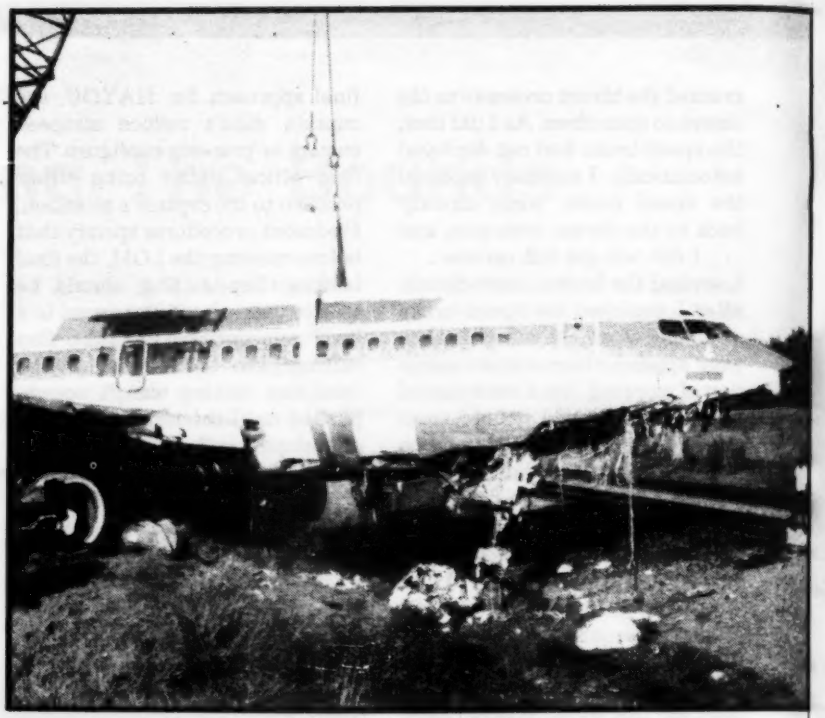
Concrete culvert area and rear view of airplane.



Left side of airplane nose against railroad track.

The Board believed because the airplane wasn't configured for landing until 500 ft above touchdown, the captain was "behind" the airplane. That is, he was setting flaps, lowering landing gear, and reducing airspeed after the flight was descending on glide slope well inside the final approach fix. Had the captain slowed the airplane and configured as required before HAYOU, he could have stabilized the approach and controlled the airspeed. Instead, the airplane crossed HAYOU at 194 knots, crossed the threshold about 165 knots, and touched down about 147 knots; considerably higher than Vref speed of 131 knots. Additionally, the airplane touched down more than 3,200 ft from the runway threshold (over 2,000 ft beyond the company's recommended touchdown point). As a result, the captain's ability to stop the airplane on the remaining runway depended on optimal use of the airplane's decelerative devices, with no margin for error allowed.

The Board examined in detail the performance of the airplane's deceleration devices and found the unstabilized approach led to the captain's inability to obtain effective deceleration. The CVR tape revealed almost simultaneous sounds of nose wheel contact and an increase in the G-trace to about 1.43 G, indicating the airplane nose wheel and the wheels of one or both main gear struts contacted the runway at approximately the same time. Main gear contact was followed by about 3 seconds of oscillation in vertical acceleration at slightly less than 1.0 G. Thus, following touchdown, very little airplane weight transferred to the main gear struts. This would have been exacerbated by the captain's stated application of forward pressure on the control column following touchdown in order to hold the nose wheel on the runway. Boeing Company data indicate that at an indicated airspeed of 15 knots above Vref, lift generated while in a 3-point attitude was approximately equal to airplane weight. Thus, there would have been little or no weight on the main gear wheels following initial touchdown, a condition which could have been maintained for 4 to 6 seconds with forward displacement of the control column. Since the airplane touched down in heavy rain on a runway exposed to over two-thirds inch of rain during the day, it's possible that initially there would have been insufficient friction between the tires and the runway to obtain a wheel speed of 60 knots or more (the speed required by combination of any two wheels to cause automatic deployment and automatic movement of the speed brake lever actuator to the "UP" position). Further, lack of any significant weight on main gear struts would have prevented strut compression needed to close air/ground safety sensor switches, precluding immediate reverse thrust selec-



Right side of forward fuselage.

Underside of forward fuselage.

tion. This would explain the captain's difficulty deploying thrust reversers.

Despite the captain's assertions that he added 20 knots to Vref because of his concern for a wind shear condition, the Safety Board believes he still failed to properly interpret and apply guidance provided on the subject in the company's operations manual. From that guidance, with surface wind reports, lack of significant convective activity, and his knowledge of the tailwind on approach, the captain should have known the existing wind shear involved that of a tailwind shearing to a light crosswind or no wind. Under these conditions, significant speed additions aren't needed and may compound airplane controllability problems. This type of wind shear tends to increase indicated airspeed during descent through the reducing tailwind shear. Moreover, four Piedmont flights that landed during the approximate 11-minute period before Flight 467's landing flew through similar wind conditions without significant speed additions or stopping difficulties. Finally, the operations manual stated "if the airplane is below 500 ft AGL and the approach becomes unstable, a go-around should be initiated immediately." The Board believed that given the unstable nature of the captain's approach below 500 ft above the runway, he should have promptly adhered to company guidance and executed a missed approach.

Evidence strongly indicates the captain and first officer were aware the approach was unstable, yet continued the approach instead of executing a go-around. The captain knew the turn to final approach course was going to be close and accepted it. He knew the likelihood of encountering a tailwind on final was high. Further, he received several indications the approach was not procedurally correct. At 2005:02, he told the first officer, "It's going to be tight," presumably in reference to configuring the airplane and capturing the glide slope and localizer. At 2006:22, when he told the first officer "George didn't do me any favors," he realized the autopilot wasn't capturing the glide slope. This was most likely caused by the excessive descent rate which exceeded the autopilot's capabilities to maintain glide slope.

Also, the first officer informed the captain at 2006:37 that the speedbrake was in manual, (i.e., down detent) contrary to Piedmont's requirement that the speed brake lever be armed before landing. The captain's response to that call was unclear on the CVR so the Board couldn't determine whether the captain armed the speed brake lever. However, failure of the ground spoilers to deploy immediately after landing suggests they weren't armed.

The GPWS alerted twice, further indicating the approach was unstable and not in accordance with company procedures. With the runway in sight for the first GPWS alert, and the first officer calling minimums for the second alert, the captain probably recognized terrain clearance was adequate and believed he could safely ignore the alert. However, the Board believed the GPWS was alerting, not for inadequate terrain clearance, but because of excessive descent rate close to the ground. Since airspeed was considerably higher than required at that point, and the airplane had just been configured for landing, *the captain should have recognized the approach was not stabilized at the appropriate airspeed, descent rate, and power setting. This drastically reduced the safety margin for landing on a wet runway.*

Probable Cause

The National Transportation Safety Board determined the probable cause of the accident was the captain's failure to stabilize the approach and his failure to discontinue the approach to a landing conducted at an excessive speed beyond the normal touchdown point on a wet runway. Contributing to the accident was the captain's failure to optimally use the airplane's decelerative devices. Also contributing to the accident was the lack of effective crew coordination during approach. Contributing to the accident's severity was the poor frictional quality of the last 1,500 ft of the runway and the obstruction presented by a concrete culvert located 318 ft beyond the departure end of the runway.

Application to MAC

It's obvious this crew didn't set out to do anything *wrong*, they just didn't concentrate on doing everything *right*. They let one deviation—the "tight" turn given them by the final controller—lead them to accept further deviations throughout the approach.

We in MAC can't take the old "It can't happen to us" stance because MAC crews have shown they're susceptible to the same mistakes. Landing hot and long and trying to stop with the airplane still "flying" has led to more than one MAC airplane in the weeds or burning off the end of the runway. If the airplane is flying you instead of vice versa—that is, if the approach isn't stabilized—take it around and try it again.

In this case, neither pilot took an aggressive attitude toward his duties of flying the airplane or assisting in the conduct of a safe, controlled approach. The captain let the airplane fly to where it wanted to go; the copilot just went along for the ride.

NTSB/AAR-87/06

Coordinates Crosscheck

"099°s, 188°w" ???

"Are we having fun yet?" The familiar flight engineer incantation squeaked through the Starlifter interphone system over the sound of the nose gear groaning to a spinning stop in the wheelwell.

"Cut the extraneous chatter below ten thousand, guys." Captain Brad MacKenzie (known only to his close friends and intimates as "Mac") reaffirmed his belief in setting a professional tone early-on for each mission. With this trip being a "floater," Mac knew he would have a tough time warding off aircrew *complacency* over the next few days.

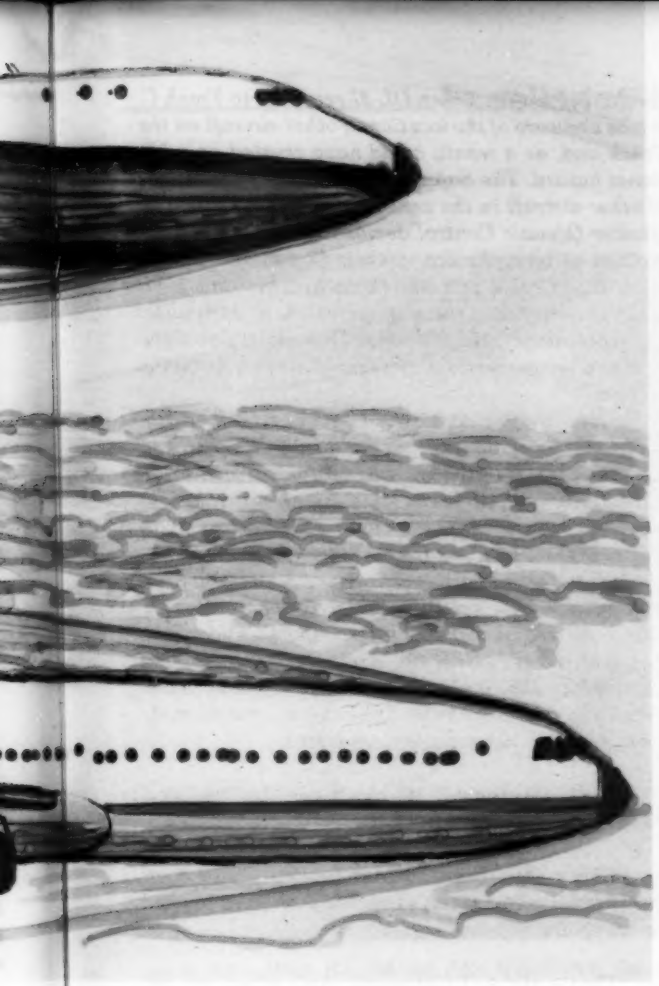
INS TACAN updates and coast out radio calls went proforma. Autopilot holding course and altitude. Mac took pride in setting a good example for Lt. Jim Smiley, the new squadron copilot. Besides, the squadron assistant chief pilot, Maj. Winner, was along to augment the crew. This would be Mac's opportunity to impress them both.

Just as most of the crew was getting settled in for the eight-hour ocean crossing . . . "Crew, this is simulated. Loadmaster disregard." (Don't want to alarm the pax.) "All others, rapid decompression drill. Oxygen, 100 percent and on, Pilot. Crew, check in!"

"Engineer's on."
"Jumpseat's up."
"Scanner's up."
"(Wheeze) Co,-co-pilot's on."

"Good show, crew. Descent procedures same as reviewed during last leg. Sorry, Lieutenant. Didn't mean to catch you right in the middle of that bite from your Dover cheesesteak with jalapeno. But that could have been real, you know.

"Before you get too wrapped around that hoagie again, how about checking the coordinates Major Winner just programmed into the INS."



"Sure thing, Captain MacKenzie, I'll have them double-checked in a flash."

"Oh, also pass me that MAC Form 21 of yours. Maybe we can get a little training signed off on this leg, too.

"Okay, it says here you need to discuss, with limited assistance, procedures for confirming INS waypoint coordinate insertion."

"Now there's a timely topic," interjected Major Winner. "Remember that commercial airline near-miss that was in the news last month?"

"I certainly do, sir," Mac replied with a self-assured glance back at the jumpseater. "In fact, I just happen to have a copy of the NTSB report here in my briefcase."

"What's NTSB?" asked Lieutenant Smiley.

"National Transportation Safety Board, Lieutenant," responded Mac. "They investigate mishaps and make recommendations to the FAA."

"Well, Captain MacKenzie, what's that report say"? asked Major Winner.

"All right sir, if you wouldn't mind listening up on the HF, I'll read this thing on hot mike . . . . Here goes:

"On July 8, 1987, at 1626 Universal Coordinated Time Delta Airlines Flight 37 (DL 37), a Lockheed L-1011-250, flew within approximately 30 ft of Continental Airlines Flight 25 (CO 25), a Boeing 747-200. Both airplanes were westbound at Flight Level 310. The incident occurred in nonradar airspace controlled by Gander Oceanic Control, near coordinates 52N 40W. The coordinates correspond to the position on North Atlantic Track (NAT) D to which CO 25 had been assigned. Preliminary evidence indicates that DL 37, which had been assigned NAT C, deviated over 60 miles from track before attempting to resume its assigned course.

The investigation of the near-midair collision is being conducted by the Canadian Aviation Safety Board with full National Transportation Safety Board participation. Although the investigation isn't yet complete, it raised several issues which the Safety Board believes deserve immediate corrective action.

Reports of gross deviations from assigned oceanic tracks are unusual, particularly with widespread use of highly accurate airborne navigation equipment; however, this incident, as well as data collected through the National Aeronautics and Space Administration's (NASA) Aviation Safety Reporting System (ASRS), suggests such deviations take place with sufficient frequency to pose a clear and direct threat to flight safety. The Federal Aviation Administration (FAA) addressed this issue in Advisory Circular (AC) 90-79, issued July 1980, suggesting procedures to be used by flightcrews to maintain continual awareness of transoceanic navigation data accuracy. However, such procedures are advisory only— not mandatory.

The Safety Board believes procedures providing continual navigation data verification should be required — not merely recommended. Many carriers regularly engaging in transoceanic flight require flightcrews maintain continuous awareness of present and predicted positions through the inertial navigation systems (INS), inertial reference systems (IRS), or Omega navigation systems (ONS), on board

almost all transport aircraft. These techniques, while varying slightly among air carriers, require flightcrews perform several common actions. Those include:

1. Plotting oceanic waypoints on a map or chart of the area to be traversed.

2. Assigning different crewmembers responsibility for entering and verifying data entered into the navigation system.

3. Matching calculated distances after inserting waypoint coordinates into onboard navigation system, and matching calculated distances between waypoints against distances provided on the flight plan.

4. Before reaching the outbound gateway, matching displayed position coordinates against those of radio navigational facilities as they're crossed.

5. Before reaching the next waypoint, matching waypoint coordinates against those on the flight plan (when crossing a waypoint and at some point thereafter).

6. Matching estimated times and distances between waypoints against those provided on the flight plan.

The investigation found the crew of DL 37 performed only one of these procedures, that requiring different crewmembers enter and verify information in the navigation system. In fact, the investigation revealed Delta crewmembers aren't supplied with oceanic charts to graphically display the coordinates and path for the assigned route or track, as recommended by AC 90-79. Consequently, the DL 37 flightcrew didn't plot present or predicted positions upon crossing waypoints, or perform other verification procedures while en route.

The Safety Board believes the FAA should require flightcrews of U.S. operators engaging in transoceanic transport under 14 CFR 121 to perform a variety of initial and en route navigation verification techniques. Moreover, due to potentially catastrophic consequences resulting from oceanic navigation errors, the Safety Board urges FAA require such procedures be implemented at the earliest possible date.

The investigation further revealed the incident was not reported to Gander Oceanic Control by either DL 37 or CO 25, or by other aircraft in the immediate vicinity. Although the flightcrew of CO 25 reported the incident upon landing, the Safety Board believes it should have been reported immediately, in accordance with Federal Aviation Regulations and International Civil Aviation Organization (ICAO) rules. Because the incident was not reported in a timely manner, the responsible air traffic control agency was unaware of the gross navigation error and could not guide DL 37 to a safe position on a track free of conflicting traffic. When DL 37 returned to Track C, it was unaware of the location of other aircraft on the Track and, as a result, could have created an additional hazard. The Safety Board believes the failure of other aircraft in the area to report the incident to Gander Oceanic Control demonstrates the need for airlines to reemphasize to their flightcrews instrument flight rules procedures, in general, and overwater international rules of operation, in particular.

Accordingly, the National Transportation Safety Board recommends the Federal Aviation Administration:

—Require flightcrews of U.S. operators, engaging in transoceanic transport under 14 CFR 121, employ at least two initial and three en route verification techniques, each different from the others, that will provide adequate protection against the use of incorrect navigation information.

—Issue an air carrier operations bulletin to principle operations inspectors (POIs) of all operators engaged in transoceanic air transport, under the requirements of 14 CFR 121, citing the circumstances of the 8 July 1987 incident and directing POIs to emphasize to operators rules applying to transoceanic operation in a nonradar environment."

"Well, Lieutenant, so much for the 'big sky' theory."

"Check this, Captain MacKenzie. Those coordinates you read are the same ones we have plotted for waypoint number eight."

"That's right, Lieutenant. And when we get there, we *won't* be repeating history!"

"MAC Flight 691, this is Clipper Oh Seven Five on company common. Thanks for the NTSB brief. Now, if it's okay with you, the rest of us out here would like to share some of this radio frequency again."

"Oops," Brad replied,"seems the switch stuck in the transmit position."

As he spoke, the flight engineer's voice bled through the background noise and into the intercom: "That's a beer."

Brad continued without pause, "Well, Lieutenant, let's take a look at which bus supplies power to the number two INS."

Portions adapted from NTSB Report A-87-105.

Left to Right: MSgt. H.L. Johnson (LM), Maj. John R. Cole (P), Capt. Kevin D. Heusinkveld (CP), MSgt. Ralph K. Barrett (FE).

Maj. John R. Cole and Crew, 105 TAS, Tennessee ANG, on a routine C-130A training mission, had completed a stop-and-go at Madison County-Carl T. Jones Field, Huntsville, Alabama, and were turning downwind when both hydraulic systems experienced catastrophic failure. Extremely stiff flight controls, momentary flight control seizure, and hydraulic lights indicated a developing malfunction while the loadmaster simultaneously reported a massive hydraulic leak with fluid gushing from the aileron boost pack area. Two or three seconds later, all utility and boost hydraulic pressure gauges went to zero and all four hydraulic system lights illuminated. Hydraulic fluid was reported ankle deep in the cargo department. The crew initiated a straight-ahead climb and performed a controllability check. Both pilots had to use extreme force to move the flight control surfaces. Aircraft controllability was marginal, compounded by the fact that flight control inputs required greater opposite force to return the controls to neutral. Not knowing how much hydraulic fluid remained in the system, and concern for fire potential from hydraulic pump cavitation, ruled out prolonged flight. To minimize aircraft control inputs, the crew prepared for an emergency landing with a wide traffic pattern and a 10-mile final. The pilots maintained control on final by coordinating control inputs and directing the throttle adjustments made by the flight engineer. In this situation, technical order information indicates nosedown pitching will occur during landing. The nosedown pitching was much more severe than anticipated, and the crew narrowly avoided disaster only by superior skill and attentiveness. They stopped the aircraft using reverse thrust and emergency brakes. Major Cole and crew exhibited outstanding professionalism and airmanship while dealing with an extremely demanding emergency. We at *TMF* heartily applaud their actions.

★

Flying-Hour Milestones

10,000

Col. Jack D. Koch, 167 TAG/CC
Col. David L. Webber, 439 MAW
Lt. Col. Paul R. Cooper, 732 MAS
SMSgt. Robert Schlachter, 732 MAS
SMSgt. Jimmie D. Vail, 302 TAW

5,000

Col. Robert C. Peck, 16 TATS
Lt. Col. Laurence V. Beall, 183 MAS
Lt. Col. Laurence R. Klingbeil, 58 MAS
Maj. Paul Doto Jr., 732 MAS
Maj. Harold P. Hudnall, Jr., 135 TAG
Maj. Peter E. Gary, 439 MAW
Maj. Richard E. Guerrieri, 701 MAS
Maj. George W. Lanphear, 58 MAS
Maj. John P. Matejczyk, 62 TAS
Maj. Michael R. McGalliard, 62 TAS
Maj. Arthur Martinez, 911 TAG
Maj. Jeffrey W. Smith, 62 TAS
Maj. Robert D. St.Austin, 710 MAS
Maj. James B. Warner, 41 TAS
Maj. Terry L. Wokaty, 16 TATS
Capt. Leonard P. Terrebonne, 62 TAS
Capt. Philip S. Troegner, 732 MAS
MSgt. Richard M. Coniglio, 53 WRS
MSgt. Dennis A. Fleming, 1 SOS
MSgt. Miguel A. Gomez, 8 MAS
MSgt. Charles L. McCracken, 61 TAS
MSgt. William A. Murray, 75 MAS
MSgt. David P. Rainey, 73 AES
TSgt. Kenneth R. Barrett, 16 TATS
TSgt. Reggie L. Bolden, 62 TAS
TSgt. Kim A. Fishburn, 86 MAS
TSgt. Mark N. Heflin, 37 TAS
TSgt. Gregory A. Hegarty, 62 TAS
TSgt. Gregory E. Hermann, 7 SOS
TSgt. David B. Hudson, 86 MAS
TSgt. Wilfred Jones, 53 MAS
TSgt. Larry McDonald, 16 TATS
TSgt. Neil Rice, 6 MAS
TSgt. Isauro T. Tamez, 37 TAS
TSgt. Vernon D. Thacker, 58 MAS
TSgt. James M. Thommen, 1 SOS
TSgt. Denis E. Youngson, 16 TATS
SSgt. Eugene M. Hinz, Jr., 33 ARRS
SSgt. Mark A. Lewis, 8 MAS

2,500

Capt. Charles A. McCausland, 55 ARRS

Ranks and units are those at time of award. See MACR 900-3 for details on how to apply for your own milestone award. ✯

READY, SET, WIN!

So, it's only the middle of February and you've already broken most or all of your New Year's resolutions. So what else is new? Welcome to the club and don't despair. Do something you hadn't "resolved" to do. Enter THE CONTEST. Contest, you say, what contest? Why, the 1988 MAC Flight Safety Writing Contest, of course. A contest you have a better chance of winning than any advertised on television by "you know who." We know a desk set, plaque, or a free one-year *TMF* subscription doesn't quite measure up to 25 million dollars, a free car, or even a television, but it has its special advantages. You'll take your prize home quietly, will pay no taxes, and won't be hounded by family and newly acquired friends. Most importantly, you won't have to worry about how to spend all that loot. So, warm up your typewriter and put together a good fly-safe story. Just follow THE RULES below.

THE RULES

The 1988 MAC Flight Safety Writing Contest is conducted according to MACR 900-3 and these rules. All entries must be original, unpublished, and postmarked no later than 31 March 1988. Stories must be between 1,000 and 3,000 words long (about 6 to 14 double-spaced typed pages). Poetry should be about 75 to 100 lines. Entries must contain an aviation safety/mishap prevention message. Manuscripts must be double-spaced, typed, and submitted in two copies. Identify entries by title only and attach a cover sheet showing the author's name, address, duty phone number, and unit. The cover sheet must also contain a brief autobiography.

The contest is open to anyone. Entries qualifying under these rules earn the author a free one-year subscription to *TMF*. However, contest prizes (desk sets and plaques) may only be awarded to military members and civilian employees of the Department of the Air Force or Air Reserve Forces. Other entrants may be selected for Honorable Mention in a special category. All winning stories will be published in *TMF*. Address entries to:

Flight Safety Writing Contest
HQ MAC/IGFE
Scott AFB, IL 62225-5101

TMF Instrument Quiz

EN ROUTE PROCEDURES

Well, Spring is around the corner, as are those pesky exercises. No doubt you'll be traversing distant airspace in anxious anticipation of fabulous MAC participation. After all, the battle can't start until we get them there. So, to hone those en route skills, get out your pencils and get to work. We borrowed most of the information from DOD FLIP *General Planning.*

1. Clearance readbacks must be verbatim.
   a. True.
   b. False.

2. During an en route segment, surface to, but not including, 18,000 ft MSL, which altimeter setting shall you use?
   a. Current reported altimeter setting of a station along the route and within 100 nm of the aircraft.
   b. If there is no station within 100 nm, the current reported altimeter setting of an appropriate available station.
   c. If there is no station within 100 nm, the most current forecast altimeter setting for the planned route segment's destination.
   d. a and b above.

3. Extreme low temperatures *will* cause serious errors in indicated altitude.
   a. True.
   b. False.

4. Pilots shall read back all altimeter settings received from approach control agencies except:
   a. when inbound during penetration.
   b. entering and departing holding patterns.
   c. during all approaches to landings.
   d. when under control of the final controller on a PAR approach and the pilot has been released from further transmission requirements.
   e. None of the above.

5. When ATC issues a cruise clearance, the pilot may conduct flight at any altitude, from minimum IFR altitude up to and including the altitude specified in the clearance. With this type of clearance, the pilot may do all but one of the following:
   a. Level off at any intermediate altitude within the airspace block.
   b. Climb/descend within the airspace block.
   c. Dispense with verbal reports when departing chosen altitudes.
   d. Assume approval to proceed to, and execute an approach at destination airport.

6. A "VIP LEVEL 6" radio transmission from ATC would indicate?
   a. A Service Category Designator for a brigadier general or equivalent VIP.
   b. Severe turbulence, lightning, organized wind gusts. Hail likely.
   c. a and b.
   d. None of the above.

7. Convective SIGMETs are issued for thunderstorm weather areas greater than or equal to VIP Level 3.
   a. True.
   b. False.

8. When ATC issues a specific airspeed clearance, the pilot is expected to maintain assigned speed:
   a. plus or minus 5 knots.
   b. plus or minus 10 knots.
   c. as close as practicable.
   d. True.

9. When the route or altitude in a previously issued ATC clearance is amended, the controller will restate applicable altitude restrictions.
   a. True.
   b. False.

10. **THE RINGER!** What is the VOR Receiver Checkpoint for Kokomo, Indiana?
   a. 097 degrees, 17.5 nm; over int NW-SE and NE-SW Runway; 2,500'.
   b. Kokomo, Indiana? YGTBSM!!!
   c. Who cares?
   d. All of the above.

11. MIX & MATCH! Match the type of airspace with the proper definition. (Airspace divisions may be used more than once.)
   a. Consists of airways designated from 1,200 ft AGL up to but not including 18,000 ft MSL. _____.
   b. Airspace of the 48 contiguous United States, District of Columbia, and most of Alaska at or above 14,500 ft MSL excluding 1,500 ft AGL, prohibited and restricted areas. _____.
   c. Airspace from 18,000 ft MSL up to and including FL 600 within the 48 contiguous United States. _____.
   d. Complete IFR flight procedures prevail with prior Air Traffic Service approval mandatory. _____.
   e. All aircraft must be equipped with Mode 3/A and Mode C capability. _____.

ANSWERS

1. b. GP para 5-18a.
2. d. GP para 5-21a.
3. a. On a route at 10,000 ft, -30 degrees F, aircraft may be 1,000 ft lower than indicated altitude. GP para 5-21c.
4. d. GP para 5-21d.
5. c. Once the pilot starts descent and verbally reports leaving an altitude in the block, he may not return to that altitude without additional ATC clearance. GP pg 2-15.
6. b. If you answered "c" give yourself partial credit. We realize the possibility of semantical misunderstanding and don't want you to compare our quizzes to exam/eval's. We wanted to point out the Radar Weather Echo Intensity Levels derived from the weather radar component providing the information—Video Integrator and Processor. GP pg 2-36.
7. b. Greater than or equal to VIP Level 4. GP pg 2-14.
8. b. Answers c or d are "kind of" okay. GP pg 2-42.
9. a. GP para 5-14.
10. a. DOD FLIP AP/1 pg 3-88.
11. a. 3.
    b. 1.
    c. 2.
    d. 2.
    e. 2. GP pg 3-2.

1. Continental Control Area.
2. Positive Control Area.
3. VOR Airway System.
4. Jet Route System.
5. High Altitude Area System.

The 30/70 Rule

There is no substitute for superior judgment.

By Capt. John F. Farrell
Clark AB, Republic of the Philippines.

The first time I heard it was back in 1979 attending an anti-drug lecture as a cadet at the Air Force Academy. "Flying an aircraft involves about 30 percent skill and 70 percent judgment," explained the recent UPT graduate. He was making a convincing argument in favor of expulsion of four students from UPT and dismissal of three Air Force instructor pilots for possession of marijuana. His logic was simple: those willing to risk a career for a few puffs of pot don't possess the judgment required to pilot a supersonic, multimillion dollar aircraft. In short, they have no business being in the cockpit.

That seemed logical to me. Moreover, it impressed upon me the premium Air Force puts on individual common sense. While it's true the Air Force wants and needs skilled aviators there is no substitute for superior judgement demonstrated by maturity and

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nurtured with experience.

From the day that new pilot explained the "30/70 rule" to me, I found it a useful tool in gauging a pilot's ability. Only the best pilots possess almost all of the 30 percent skill and 70 percent judgment needed to fly an aircraft. The worst have little of either. Most of us fall somewhere in between. But, if you subscribe to the 30/70 rule, then one thing is clear. Even the most skilled pilot in the world will never be better than 30 percent if he/she cannot augment skill with proper judgment.

A case in point involves a pilot with plenty of the former but almost none of the latter. In this story we'll refer to him as Hal Hands. Hal was a C-130 aircraft commander stationed in the Philippines. As his pseudonym suggests, Hal was an exceptionally skillful pilot. He could hold headings, altitudes, and airspeeds better than anyone in the squadron. No one doubted Hal could make the Herk do whatever he willed it to do.

The things Hal wanted that aircraft to do, unfortunately, were sometimes not too smart, and often illegal. One of Hal's favorite stunts was to show impressionable young copilots what the low-level picture looked like from below 100 ft AGL. I specifically remember such incidents because *I was one* of those young copilots. I have to admit I was amazed at how close we got to the palm trees and nipa huts. I swear I could have reached out and grabbed a coconut. Although the minimum altitude for low-level flying in the Philippines was 500 ft AGL, Hal managed to stay out of radar coverage, and lack of telephone service in the rural Philippines made violation reporting non existent. But not to worry. Everybody knew Hal could handle the Herk below 100 feet.

Not that Hal was never caught bending the rules. He could handle a sticky situation about as well as he could an airplane, and when called on the carpet, Hal was usually able to fast-talk his way out of a predicament with little trouble.

All this made Hal a living legend in the squadron. He was considered a John Wayne-type maverick, the sort of guy who broke the rules but always delivered and got the job done. He portrayed the cocky Hollywood pilot image. Also, Hal was a popular guy. A carefree bachelor, he enjoyed partying in the Angeles City bars. Everybody liked Hal. Hence, to a young copilot, Hal appeared to be a hot pilot with a good working relationship with other crewmembers—someone he might want to emulate and strive to imitate. I remember one copilot telling me, "If we ever go to war, this boy is following Hal Hands."

That young copilot is now an aircraft commander with that favorable impression of Hal still in his mind. One day, he may think himself as skillful as Hal. The flaw in this thinking, however, is we tend to be poor judges when evaluating our abilities. Reason we have stan/eval, I suppose. Remembering his copilot days with Hal, this new AC may take his C-130 below 100 ft and exceed his own skill level. My worst nightmare pictures this same AC dipping his wing in a turn, clipping the ground and cartwheeling across the countryside. Another version has him plowing his aircraft and crew into the side of a mountain. Still another has him losing an engine and unable to climb out of a valley on the remaining three or, at the very least, exposing his copilot to the same lack of judgment he experienced with Hal. Then the process continues when that new AC's copilot is ready for upgrade. The seed Hal planted still bears ill fruit.

What Hal and other pilots like him fail to realize is that they are continually being judged when they fly . . . if not by evaluators or instructors, then by other crewmembers. He exposed himself to criticism for giving a poor lesson to his copilot and endangering his crew. Under scrutiny, he lacked the proper judgement to fly safely. When the crew doubts the aircraft commander's competence, discipline and crew coordination breakdown and the mission suffers.

To sum it up, a pilot possessing 20 percent skill but only 5 percent judgment is only 25 percent on his way toward being the best. (That's hardly worth two bits.) But a pilot with just 10 percent skill and 40 percent judgment is 50 percent of a perfect pilot. And that ain't half bad! ★

A Class of 1980 graduate from the US Air Force Academy, Captain Farrell completed UPT at Williams AFB, AZ, in 1981. He was then assigned to fly C-130s with the 21st TAS in the Republic of the Philippines. In December, 1986, he was assigned to the History Department at the Air Force Academy.

USAF MH-60, Ft. Bragg, N.C.

As I See It

By Maj. Gen. G. E. Younghusband
Canadian Forces

(Editor's Note: The following article, by Maj. Gen. G. E. Younghusband, Canadian Forces, first leader of the famous Canadian Forces "Snowbirds," contains an important message for MAC, especially in light of several recent mishaps. Although in MAC we may not fly red, white, and blue fighters, we do a lot of what could be called "demonstration" flying. Remember, flying is hazardous enough without trying to add a little "extra" to the show.)

One activity all airmen enjoy, be they members of our highly acclaimed Snowbirds or a squadron pilot picked to do a fly past on ground hog day, is participation in an air display. It is the chance you have to show your pride in the aircraft, your unit, the Canadian Forces (CF) and in your own ability. The differences between normal ops and flying in an air display result from pressure generated by the airshow environment. A pressure brought on by flying in front of a large number of spectators, by the need to give a performance which compares favourably with others on the program, and by the sheer excitement generated by the often carnival-like atmosphere.

C-130 LAPES mishap, Ft. Bragg, N.C.

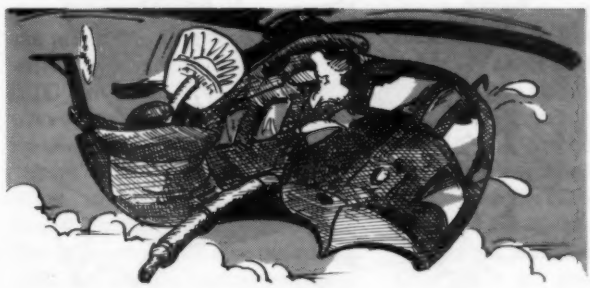
While flight safety considerations in display flying are the same as those which apply in normal squadron operations, failure to practice them rigorously can and frequently does result in a highly visible and costly accident. The keys are supervision and self-discipline. A safe and successful performance starts long before show day and the role of the supervisor is paramount. He must select a suitable pilot or crew, approve a choice of manoeuvers, monitor training, and give final blessing from personal observation prior to the first public presentation. Self-discipline is a good "motherhood" expression, but is critical in the air display world. Self-discipline for display aircrew means not exceeding the limits you have used during training, flying only the manoeuvers you have practiced and that have been authorized, not letting someone else's performance impact on yours (it's not competition), and above all, never doing anything on the spur of the moment.

Those of us who have been around for a few years have experienced times when we chafed under what we considered overly restrictive limits on the quantity and quality of airshow participation. These periods usually followed one or more disastrous accidents. Usually the result of a lack of supervision or a lack of self discipline, the young pilot working up a display with minimal supervision, the pilot who practices at a minimum of 300 ft and then flies 50 ft on show day, and so on. Participation in air displays can pay great dividends in gaining recognition and support for the CF, witness the popularity and success of the Snowbirds, but the impact can also be terribly negative if our performance is poorly executed, obviously dangerous, or ends with a crash. Air display activities are of considerable benefit to the Service and are enjoyed by the public and by the participants. If we want reasonable limitations and to enjoy maximum benefits from our efforts, all we have to do is approach our display tasking in the same professional manner we approach our other flying operations . . . As I see it!

Courtesy: *Flight Comment*

BUZZ BOMB!

One very sharp loadmaster heard a faint buzzing noise in a baggage pallet, despite the roar of the Starlifter's engines, just prior to block-out. Everybody was evacuated and EOD's Rin Tin Tin was called to the scene. Rinny alerted on a bag, and the boys in the padded uniforms opened it to find–an errant electric razor. Although this exciting situation resulted in sighs of relief and smiles all around, the professionalism and attention to detail demonstrated by the loadmaster was terrific!



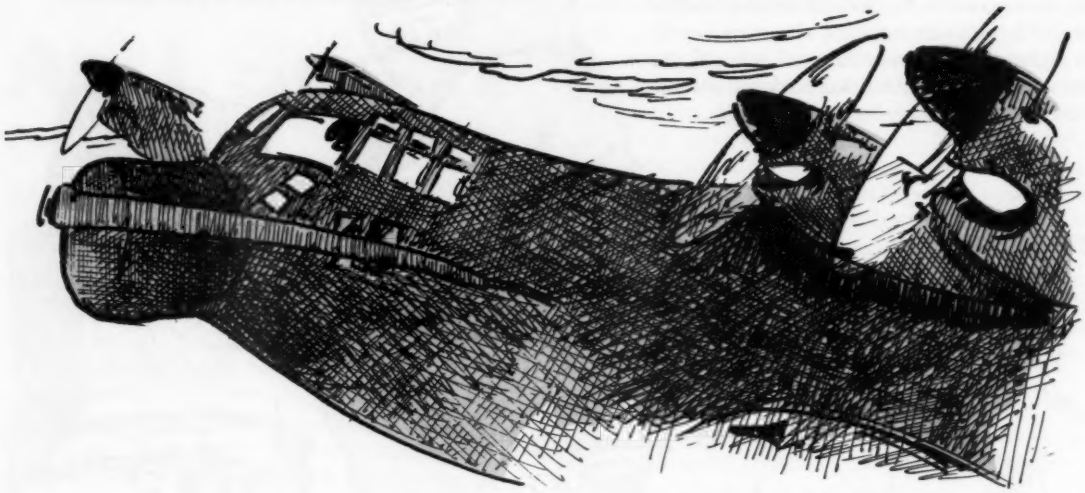
ALL ENGINES SUCK . . . .

An HH-3 on short final to an LZ, during an NVG formation approach, sucked up a clear plastic fertilizer bag. The persistent and persuasive foreign object was drawn over the intake of one engine, thereby strangling available cooling air. The subsequent air starvation resulted in virtually complete heat-induced destruction of the engine hot section for a total cost of 14,000 smackers.

QUICKSTOPPERS

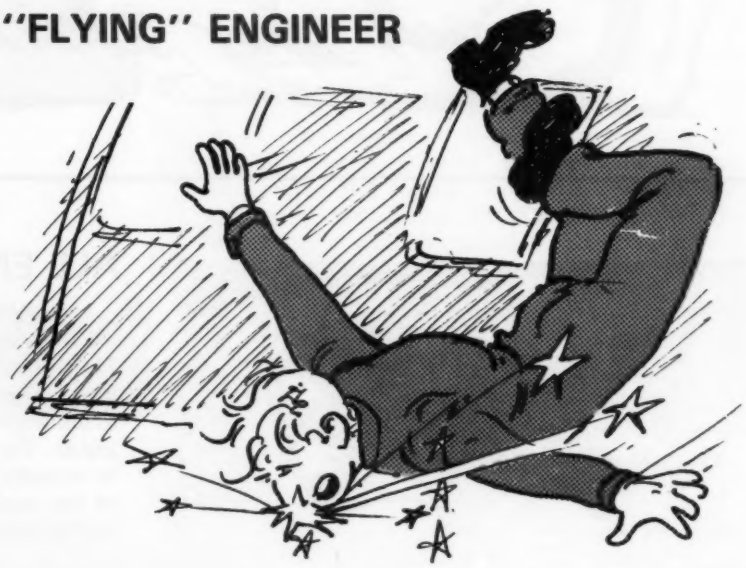
SPEEDERS LOSE THEIR PRIDE

A Combat Talon crew was following the Scottish terrain when they hit the kind of turbulence that loosened their teeth and rolled their socks down (inside the boots). The left-seater firewalled the throttles to make altitude and clear an overcast; but before anyone could call it, all four engines topped 23,000-inch pounds of torque! Those four engines and their mounts cost maintenance a lot of unplanned work, the crew a lot of grief and, all of us, a bunch of dollars. The moral is obvious—when flying instruments, use all of them!



A "FLYING" ENGINEER

While practicing fluid trail procedures on a no-weather factor, low-level route, the H-3 crews spotted wires, wires. Number 2 pulled the cyclic hard aft and collective hard up, flaring the aircraft nose high. (*Editor's note: for you yokers, this is like yanking the yoke hard aft and goosing the throttles.)* The good news is they missed the wires; the bad news is the flight engineer was out of his safety belt and went on an internal flight suffering a hard, one point landing on his nose! Set not thyself up for the big fall while low-level.



GALAXY OVENS

Late last summer, a C-5 deadhead crewmember developed heart-attack-like symptoms during taxi. The crew stopped the airplane and called the ambulance. Fortunately, our stricken crewmember was suffering nothing more than heat exhaustion. Seems that after a rather strenuous baggage-loading exercise, he sat down in the hot, hot pax compartment. That heat brought about the symptoms. Unfortunately, there's no fix for this one. The lizard skin absorbs heat; and, despite the loadmaster's best intentions with opening hatches, it just doesn't cool down back there until after climbout. The only advice we can give is plan around it and drink plenty of water.

C-130 EP QUIZ

Okay you whiz kids, follow the symptoms and figure out what's wrong. The Herky crew just completed a formation low approach and was about two miles past the departure end of the runway; got the picture? Now, they get a left wheel-well overheat light; next, a GTC fire light. Watch it, here's where it gets complicated, because we also get the GTC "Door Open," "Start" and "On Speed" lights! What do you do? Wheel-Well Overheat Procedure. Good call. The instructor pilot also pulled the GTC fire handle, just as a precaution. Next, the loadmaster reports a burning odor and, worse yet, spots smoke at the forward/top portion of the wheel-well. How are you doing so far? If you're isolating the bleed air, you and the mishap crew live! But wait, there's more. On short final, the flight engineer spots number 1 and 2 fuel quantities going off-scale high—simple; pull the circuit breakers. But alas! somebody's been helping, 'cause the GTC control, radio compass 1 & 2, door warning light, taxi lights, and GTC essential bus CBs have all popped. Well, to make a short story long, the welded joint in the bleed air supply Y-duct failed causing 400-degree, 125 psi air to inflate the GTC and ATM compartments and start a fire. Fire damage occurred to all major wire bundles and electrical components, the ATM, some fluid lines, and structural members in the GTC, ATM, and left wheel-well compartments. Furthermore, as a result of the wire bundle burning through, both agent bottles discharged. Remember what they told you about props and bleed air?

DID ANYONE CHECK THE . . . ? or, HASTE MAKES WASTE

The noise is deafening as the klaxon sounds; the tanker crew responds as trained. It's exciting! It's professional! They fire up the jet motors and begin taxiing—but wait! Something's wrong! This puppy won't steer, and, OH GOD! It won't stop either! Off the taxiway and onto the grass—through the fence knocking over the sensors. Quick egress; whew, no injuries. What happened??? Uh, ahem, um, did anyone turn on the hydraulics? Uh—no. But before we hang the aircraft commander, let's not forget he had some help making this error. The first point is to realize the switches should not have been off. They are normally left "ON" for a cocked alert plane. However, this day, maintenance performed some fixin' and left them off. Don't jump on them either. It's okay for them to work on the alert force, but they have to tell the aircraft commander. In this case, they didn't. There were other factors contributing to this mishap, but the root causes fall into the same old category: discipline, crew coordination, and procedural compliance. Don't rush past the things you need to do. This mishap was expensive, but not fatal. The same, recurring causal factors result in more widows and orphans; and dead crews don't contribute to the warfighting effort.

After Deadlines

THE LAST LIGHTLIFT SPECIAL OPERATIONS UNIT in the Air Force closed 1 January. For more than 35 years, this unit in Panama played an excitingly varied role in the U.S. Southern Command theater. Most recently known as Det 1, 1 SOW, they were the last unit to fly Air Force UH-1N gunships. Besides special operations support in defense of the Panama Canal, the unit flew missions including humanitarian relief, tropic survival school support, anti-drug smuggling, civic action, and search and rescue. Deployed locations for disaster relief included Managua, Honduras, Guatemala City, and Equador. Unit deactivation ends a long and colorful chapter of Air Force special operations in Latin America. *TMF* bids the unit a very sentimental farewell.

ECCM STARLIFTER. Lockheed Aeronautical Systems Company was awarded a $24.8 million contract for airborne Electronic Counter-Countermeasures (ECCM) instrumentation of a C-141A assigned to the 4950th Test Wing at Wright-Patterson AFB, Ohio. Modifications to be accomplished by Lockheed's Aeromod facility in Greenville, South Carolina, will adapt the aircraft's cooling and electrical systems to accommodate test instrumentation. Lockheed's contract allows it to use the aircraft as "an airborne laboratory platform designed to test a wide range of sensors in a dynamic electronic countermeasures environment."

U.S. NAVY GETS HELP from MAC C-130H aircraft in test-dropping dummy defensive mines. The High Volume Mine Layer (HVML) system was specially designed to fit the C-130's 9x10x40 cargo hold. HVML is a gravity-drop version of a Lockheed-designed powered cargo aircraft minelayer system. The system features roll-on modular mine pallet units supported by the C-130's 463L rail-roller system. Defensive minelaying is a potential new mission for the versatile Herk.

C-17 PROCUREMENT is on schedule. For airlifters who have visions of a C-17 in their future, that dream has begun to materialize. The McDonnell Douglas facility in Torrance, California, began fabrication of the first aircraft part in November 1987. That piece was an aluminum lower support corner for the cargo floor's edge. FY '88 budget provides for Lot #1 procurement of the first two aircraft, with first flights scheduled for 1990. Initial aircraft delivery should occur by December 1991, leading to MAC initial operational capability by 1993. Plans call for delivering 210 C-17s through the year 2000.

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Touch N Go